

# CCAFS WEST AFRICA

Site: Kaffrine, Senegal



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



Photo: ECECHO Anouk Delafortrie

## Disclaimer

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## Content

● Introduction	3
● Map	4
● Demography and basic site characteristics	5
● Changes in farming practices and drivers of changes in resources	6
● Livelihood diversification	7
● Food security	8
● Collective action in natural resource management (NRM)	10
● Membership of organisations and organisational agendas	11
● Household assets	12
● Networks of information	13
● Organisational priorities	16

## Introduction

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together the world's best researchers in agricultural science, development research, climate science and Earth System science to identify and address the most important interactions, synergies and trade-offs between climate change, agriculture and food security.

CCAFS is focusing its research for development efforts in five regions, East and West Africa, South and Southeast Asia as well as Latin America, working in 25 research sites. The regions represent areas that are particularly vulnerable to climate change, and the sites are focal locations to generate knowledge and learning that can be applied and adapted to other regions worldwide.

Extensive baselines have been implemented at all CCAFS sites and consist of analysed information collected at three levels: households, communities and organisations. The baselines capture the big picture of how farmers are changing their practices in light of climate change and other pressures. The aim is to revisit the same communities and households in five and again in ten years to document changes in livelihoods, resource management practices and other factors over time

and update these indicator documents accordingly. The CCAFS baseline is a key component of the program's monitoring and evaluation system.

This document series compiles key indicators from the three levels of the baseline for each site. Indicators include: demography and basic site characteristics of each site, rainfall distribution, changes in farming practices and land management, income sources, food security and food sources, asset ownership by households and involvement in organisations and more.

This CCAFS baseline indicator document was developed for the CCAFS site at Kaffrine in Senegal.

The baseline indicator series is complemented by CCAFS site atlases, that include site maps with climate information, biophysical characteristics and socio-economic factors. Site maps are available at: [www.ccafs.cgiar.org/atlas-ccaafs-sites](http://www.ccafs.cgiar.org/atlas-ccaafs-sites)

Download the baseline tools, data and reports:  
[www.ccafs.cgiar.org/resources/baseline-surveys](http://www.ccafs.cgiar.org/resources/baseline-surveys)

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### Sources

Throughout this document the sources of data for the indicators are colour coded as follows:



CCAFS Household baseline study



CCAFS Village baseline study



CCAFS Organisational baseline study



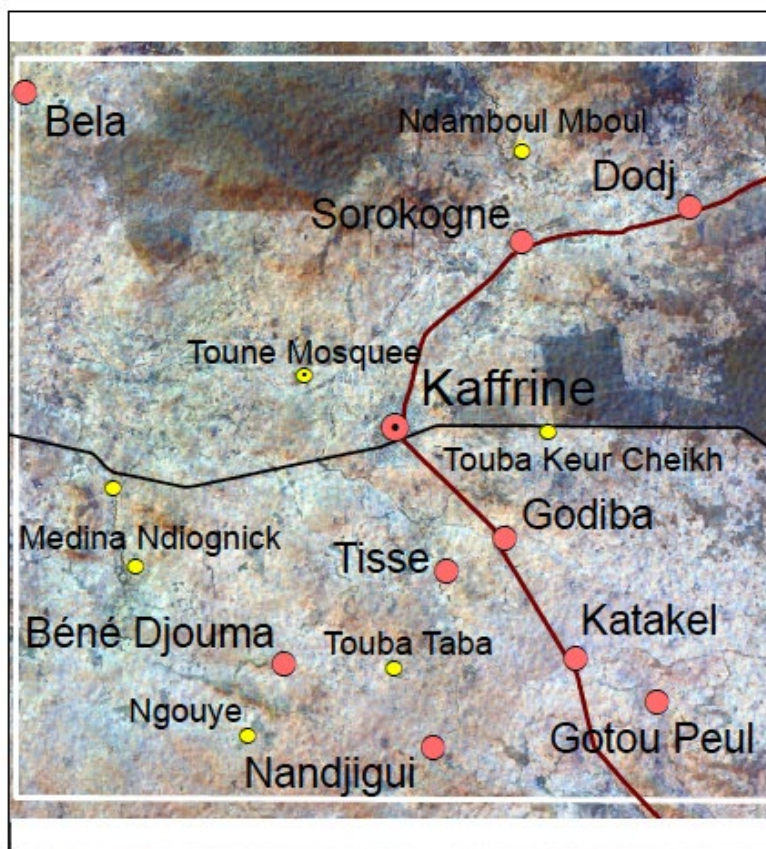
## Map

Country: Senegal



 Site location

CAAFS Sampling Frame: Kaffrine



CAAFS Site Name (ID):  
Kaffrine (SE01)

CAAFS Sampling Frame  
Name (ID): Kaffrine (12)

Road

Railway

Town

Settlement

CAAFS VBS / OBS Village

CAAFS HBS Village

Coordinates of the CCAFS  
Sampling frame

15.407W 13.968N  
15.407W 14.242N  
15.686W 14.242N  
15.686W 13.968N

Source: Förch W et al. 2013. Core Sites in the CCAFS Regions: East Africa, West Africa and South Asia, Version 3. Copenhagen: Denmark. CCAFS

## Demography and basic site characteristics

	Baseline	Mid-term	Final
Ratio of women headed households	2%		

### % households of different sizes

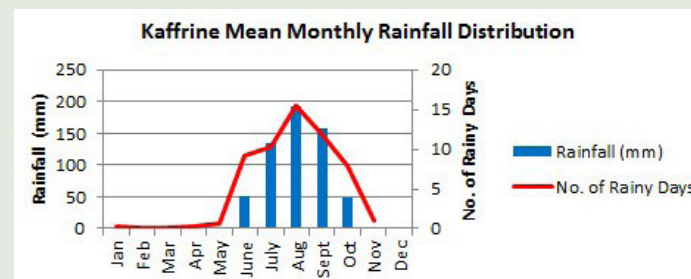
Number of people in the household	Baseline	Mid-term	Final
1	0%		
2	0%		
3	0%		
4	1%		
5	6%		
6	5%		
6+	88%		

Area of land cultivated (ha)*	1330.75		
Average (mean) per household (ha)	9.64		

### Highest level of education obtained by any household member

No formal education	46%		
Primary	34%		
Secondary	19%		
Post-secondary	1%		

\*Area of land cultivated (ha) is the total amount of owned or rented land used for growing food or aquaculture



Source: MarkSim<sup>1</sup>

### Ratio of local organisations to total number of organisations named\*

	Baseline	Mid-term	Final
Men's group	3/13		
Women's group	17/21		

\* Organisations have been recoded by CCAFS researchers from original data (participant perceptions of community, local and beyond local) to categories of local and external.

<sup>1</sup>Source: Jones P G, Thornton P K, Diaz W and Wilkens P W. 2002. MarkSim, a computer tool that generates simulated weather data for crop modeling and risk assessment. Version 1, 2002. CD-ROM and Users Manual. CIAT, AA6713, Cali, Colombia, 87 pp.

## Changes in farming practices and drivers of changes in resources

### % households introducing 3 changes or more

	Baseline	Mid-term	Final
Crop	88%		
Water	0%		
Soil	59%		
Tree/agroforestry	80%		
Livestock	67%		

#### Adaptation

% households reporting changes to their agricultural practices

0-1 change	0%		
2-10 changes	11%		
11 or more changes	89%		

#### Mitigation

% households doing

Tree management\*

Yes	80%		
No	19%		

Soil management

None	4%		
Some	96%		

Intensification

None	0%		
Low	30%		
High	70%		

Productivity

No Increase	25%		
Some increase	75%		

### Drivers of changes to crop production and land management

% households reporting this driver

	Baseline	Mid-term	Final
Markets	90%		
Weather/climate	25%		
Pest and Diseases	3%		
Labour	47%		
Land	62%		
Projects	10%		

### Drivers of changes to livestock production\*

% households reporting this driver

Markets	51%		
Weather/climate	11%		
Pest and Diseases	92%		
Labour	14%		
Projects	0%		

### Drivers of change in the community

Frequency with which they were mentioned in group discussions

	Men			Women		
	Baseline	Mid-term	Final	Baseline	Mid-term	Final
Population Growth	2			0		
Deforestation	1			1		
Pest and Diseases	0			0		
Information/Knowledge	0			0		
Land Demarcation/fragmentation	1			1		
Soil degradation/Erosion	0			1		
Rainfall Changes	2			0		
Charcoal Burning/Fuel	0			0		
Government	0			0		
Forest Fire/Bush burning	0			0		
Overuse	0			1		
Spiritual/Cultural/Religious	0			0		
Invasive tree species	0			0		
Increase in wealth	0			0		
Increase in livestock	0			0		
Social/Community conflicts	1			2		
Infrastructure	1			2		

\*For tree/agroforestry changes these are the households who have either planted or protected trees within the last year

\*For livestock changes these are the households who have made 3 of more of the changes in the livestock section

## Livelihood diversification

	Baseline	Mid-term	Final
<b>Source of Cash Income other than own farm</b>			
Employment on someone else's farm	47%		
Other off-farm employment	23%		
Business	64%		
Remittances/gifts	40%		
Payments for environmental services	0%		
Payments from government or other projects/programs	37%		
Loan or credit from a formal institution	23%		
Informal loan or credit	62%		
Renting out farm machinery	19%		
Renting out your own land	6%		
No off-farm cash source	2%		
<b>Product diversification</b>			
% of households			
1-4 products (low)	1%		
5-8 products (intermediate)	54%		
9 or more products (high)	46%		
<b>Selling/Commercialization Diversification:</b>			
% of households			
No products sold	1%		
1-2 products sold (low)	28%		
3-5 products sold (intermediate)	63%		
6 or more products sold (high)	8%		



## Food security

### Food Security Index

% households	Baseline	Mid-term	Final
More than 6 hunger months/year	1%		
5-6 hunger months/	3%		
3-4 hunger months/	33%		
1-2 hunger months/	32%		
Food all year round/No hungry period	2%		

### Food security organisational linkages

#### Organisation receives

#### Men groups

	Baseline	Mid-term	Final
Funding	0		
Capacity Building	0		
Food	1		

#### Organisation provides

Funding	0		
Capacity Building	0		
Food	1		

#### Organisation receives

#### Women groups

	Baseline	Mid-term	Final
Funding	2		
Capacity Building	2		
Food	0		

#### Organisation provides

Funding	1		
Capacity Building	1		
Food	0		

### Source of food during highest and lowest shortage months

	Baseline	Mid-term	Final
% households mainly consuming from own farm in the month of highest shortage	9%		
% households mainly consuming from own farm in the month of lowest shortage	100%		

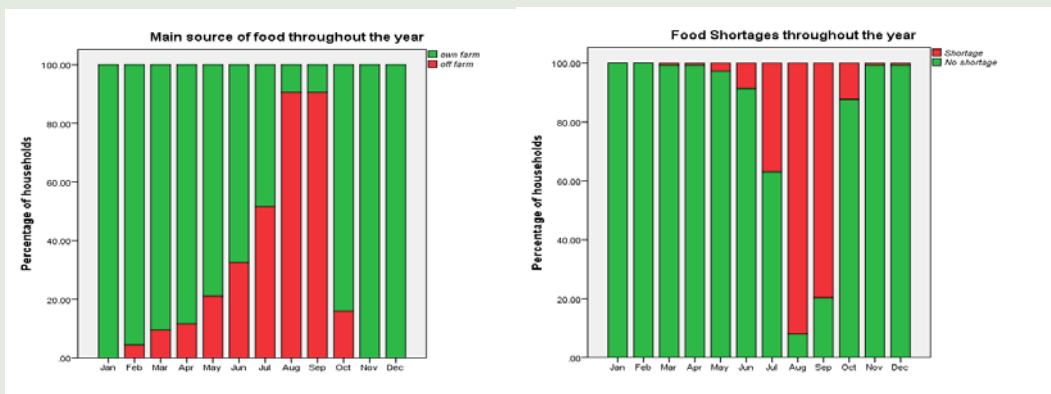
### Ratio of local organisations to total number of organisations named in each area of food security work\*

Men's group	Baseline	Mid-term	Final
Availability	3/9		
Access	3/5		
Utilisation	0/1		

Women's group	Baseline	Mid-term	Final
Availability	5/8		
Access	5/6		
Utilisation	5/7		

\* Organisations have been recoded by CCAFS researchers from original data (participant perceptions of community, local and beyond local) to categories of local and external.

These charts are taken from the Household Baseline Survey - Food Security Section



## Collective action in natural resource management (NRM)

Resource	Gender	Discussed	Baseline	Mid-term	Final
<b>Is there an issue with the resource?</b>					
<b>Irrigation</b>	M	Yes	Seasonal ponds, Reduction in water-retention capacity; Waterborne diseases		
	F	Yes	Dries up in dry season		
<b>Farmland</b>	M	Yes	Exhausted and degraded soils; Lack of fertilizers and improved seed; pests		
	F	Yes	infertile and degraded soils; Out-dated agricultural equipment		
<b>Forest</b>	M	Yes	Degraded; Refuge for thieves. Destruction of crops by wild animal		
	F	Yes	More and more sparse, less dense. Larger game vanished. Wild animals cause loss of production		
<b>Pasture</b>	M	No			
	F	No			
<b>Markets</b>	M	No			
	F	No			
<b>Is there a problem of access to the resource?</b>					
<b>Irrigation</b>	M	Yes	Community management		
	F	Yes	Community resource		
<b>Farmland</b>	M	Yes	Individual family fields, exists some communal land		
	F	Yes	Farms are inherited by men who give a small portion to their wives		
<b>Forest</b>	M	Yes	Community management. Free access for adjacent communities		
	F	Yes	Protected intercommunity forest		
<b>Pasture</b>	M	No			
	F	No			
<b>Markets</b>	M	No			
	F	No			
<b>Is there any local action in place to address the problem?</b>					
<b>Irrigation</b>	M	No			
	F	No			
<b>Farmland</b>	M	No			
	F	No			
<b>Forest</b>	M	No			
	F	No			
<b>Pasture</b>	M	No			
	F	No			
<b>Markets</b>	M	No			
	F	No			

## Membership of organisations and organisational agendas

### % households with at least one member belonging to organised groups

	Baseline	Mid-term	Final
Tree nursery/tree planting	1%		
Water catchment/management	2%		
Soil improvement related	0%		
Crop improvement related	1%		
Irrigation	0%		
Savings/credit related	28%		
Agricultural product marketing	21%		
Agricultural productivity enhancement related	4%		
Seed production	1%		
Vegetable production	1%		
Other group not mentioned above?	28%		
No groups	37%		

### Ratio of local organisations involved in Natural Resource Management to total number of organisations involved in NRM\*

	Baseline	Mid-term	Final
Men's group	0/3		
Women's group	--		

\* Organisations have been recoded by CCAFS researchers from original data (participant perceptions of community, local and beyond local) to categories of local and external.

## Household assets

% household with assets by type	Baseline	Mid-term	Final
Basic level	0%		
Intermediate level	81%		
High level	19%		

### % households ownership

#### Transport

Bicycle	9%		
Motorcycle	7%		
Car or Truck	1%		

#### Production

Tractor	0%		
Mechanical Plough	83%		
Mill	2%		
Water pump/Treadle pump	0%		
Thresher	0%		
Boat	0%		
Fishing Nets	0%		

#### Energy

Solar Panel	1%		
Generator	0%		
Battery	0%		
Biogas Digester	0%		
LPG	0%		

#### Information

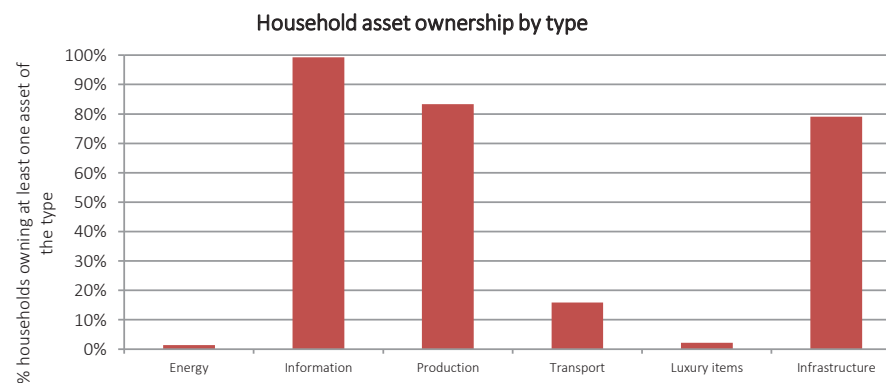
Radio	97%		
Television	3%		
Cell Phone	94%		
Computer	0%		
Internet Access	0%		

#### Luxury

Refrigerator	0%		
Air Conditioning	0%		
Electric Fan	0%		
Bank Account	2%		

#### Infrastructure

	Baseline	Mid-term	Final
Improved storage facility for crops	10%		
Water storage tank	1%		
Well/borehole	1%		
Running/tap water in dwelling	7%		
Electricity from a grid	1%		
Improved housing	8%		
Improved roofing	12%		
Separate housing for farm animals	78%		





## Networks of information

Networks of information - Men Group			
	Baseline	Mid-term	Final
<b>Inputs and soil fertility</b>			
Farmer/Pastoralist	Yes		
Traders	No		
Elders	No		
Marabout (spiritual leader)	No		
Women	No		
Men	No		
DRDR	Yes		
IRSV	No		
Water and Forest Services	No		
Meteorological Service	No		
Health clinic	No		
Market Vegetable project	No		
Women's Associations	No		
State	No		
Rural community	Yes		
Regional Radio (Kaolack)	Yes		
National Radio	No		
Television	Yes		
Village Chief	Yes		
Friday Mosque	Yes		
Weekly market	No		
Town market	No		
Observation of nature	No		

Networks of information - Men Group			
	Baseline	Mid-term	Final
<b>Human and animal health</b>			
Farmer/Pastoralist	Yes		
Traders	No		
Elders	No		
Marabout (spiritual leader)	No		
Women	No		
Men	No		
DRDR	No		
IRSV	Yes		
Water and Forest Services	No		
Meteorological Service	No		
Health clinic	Yes		
Market Vegetable project	No		
Women's Associations	No		
State	No		
Rural community	No		
Regional Radio (Kaolack)	Yes		
National Radio	Yes		
Television	Yes		
Village Chief	Yes		
Friday Mosque	Yes		
Weekly market	No		
Town market	No		
Observation of nature	No		

Networks of information - Men Group			
	Baseline	Mid-term	Final
<b>Prices of agric. &amp; livestock products</b>			
Farmer/Pastoralist	Yes		
Traders	Yes		
Elders	No		
Marabout (spiritual leader)	No		
Women	No		
Men	No		
DRDR	No		
IRSV	No		
Water and Forest Services	No		
Meteorological Service	No		
Health clinic	No		
Market Vegetable project	No		
Women's Associations	No		
State	Yes		
Rural community	No		
Regional Radio (Kaolack)	Yes		
National Radio	Yes		
Television	Yes		
Village Chief	Yes		
Friday Mosque	Yes		
Weekly market	Yes		
Town market	Yes		
Observation of nature	No		

## Networks of information

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Better livestock feeding techniques</b>			
Farmer/Pastoralist	No		
Traders	No		
Elders	No		
Marabout (spiritual leader)	No		
Women	Yes		
Men	Yes		
DRDR	No		
IRSV	No		
Water and Forest Services	Yes		
Meteorological Service	No		
Health clinic	No		
Market Vegetable project	Yes		
Women's Associations	Yes		
State	No		
Rural community	No		
Regional Radio (Kaolack)	No		
National Radio	No		
Television	No		
Village Chief	No		
Friday Mosque	No		
Weekly market	No		
Town market	No		
Observation of nature	No		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Drought: alert on drought pockets</b>			
Farmer/Pastoralist	No		
Traders	No		
Elders	No		
Marabout (spiritual leader)	No		
Women	Yes		
Men	Yes		
DRDR	No		
IRSV	No		
Water and Forest Services	No		
Meteorological Service	No		
Health clinic	No		
Market Vegetable project	No		
Women's Associations	No		
State	No		
Rural community	No		
Regional Radio (Kaolack)	No		
National Radio	No		
Television	No		
Village Chief	No		
Friday Mosque	No		
Weekly market	No		
Town market	No		
Observation of nature	No		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Making of compost</b>			
Farmer/Pastoralist	No		
Traders	No		
Elders	No		
Marabout (spiritual leader)	No		
Women	No		
Men	No		
DRDR	No		
IRSV	No		
Water and Forest Services	No		
Meteorological Service	No		
Health clinic	No		
Market Vegetable project	No		
Women's Associations	No		
State	No		
Rural community	No		
Regional Radio (Kaolack)	Yes		
National Radio	No		
Television	No		
Village Chief	No		
Friday Mosque	No		
Weekly market	No		
Town market	No		
Observation of nature	No		

## Networks of information

Networks of information - Men Group			
	Baseline	Mid-term	Final
<b>Onset/evolution of rainy season</b>			
Farmer/Pastoralist	No		
Traders	No		
Elders	No		
Marabout (spiritual leader)	Yes		
Women	No		
Men	No		
DRDR	Yes		
IRSV	No		
Water and Forest Services	No		
Meteorological Service	Yes		
Health clinic	No		
Market Vegetable project	No		
Women's Associations	No		
State	Yes		
Rural community	No		
Regional Radio (Kaolack)	Yes		
National Radio	Yes		
Television	Yes		
Village Chief	No		
Friday Mosque	No		
Weekly market	No		
Town market	No		
Observation of nature	Yes		

Networks of information - Men Group			
	Baseline	Mid-term	Final
<b>Pests</b>			
Farmer/Pastoralist	Yes		
Traders	No		
Elders	No		
Marabout (spiritual leader)	No		
Women	No		
Men	No		
DRDR	Yes		
IRSV	No		
Water and Forest Services	No		
Meteorological Service	No		
Health clinic	No		
Market Vegetable project	No		
Women's Associations	No		
State	No		
Rural community	Yes		
Regional Radio (Kaolack)	Yes		
National Radio	Yes		
Television	Yes		
Village Chief	Yes		
Friday Mosque	Yes		
Weekly market	No		
Town market	No		
Observation of nature	No		

## Networks of information

% of households receiving weather-related information			
	Baseline	Mid-term	Final
Start of the rains	89%		
Forecast of extreme events	15%		
Forecast of pest or disease outbreak	7%		
2-3 month weather forecast	67%		
2-3 day weather forecast	87%		

Of households receiving information, who in the family receives it			
	Baseline	Mid-term	Final
Start of the rains			
Men	45%		
Women	2%		
Both	54%		

Forecast of extreme events			
Men	33%		
Women	0%		
Both	67%		

	Baseline	Mid-term	Final
2-3 month weather forecast			
Men	42%		
Women	2%		
Both	55%		

2-3 day weather forecast			
Men	43%		
Women	2%		
Both	56%		

	Baseline	Mid-term	Final
Forecast of pest or disease outbreak			
Men	22%		
Women	0%		
Both	78%		



## Organisational priorities

Relative importance in the portfolio of organisations  
placed on climate or weather related activities

	Baseline	Mid-term	Final
<b>Allocation of time</b>			
Very high	8%		
High	23%		
Medium	38%		
Low	31%		
None	0%		
<b>Allocation of staff</b>			
Very high	8%		
High	31%		
Medium	31%		
Low	31%		
None	0%		
<b>Allocation of budget</b>			
Very high	0%		
High	8%		
Medium	46%		
Low	31%		
None	15%		

## Organisational priorities

Match of organisational activities to perceived needs of communities			
Community issues about natural resources and infrastructure	Organisation activities		
	Baseline	Mid-term	Final
<b>Forest:</b> degraded; more and more sparse, less dense; larger game vanished; wild animals destroy crops	Forests protection, assisted natural regeneration and reforestation; sensitization and capacity building on environmental and natural resource management and against bush fires; Participative development of forests		
<b>Ponds:</b> Seasonal, dry up in dry season; Reduction in water-retention capacity; Waterborne diseases	Sensitization of communities for the use of water points for agriculture, especially horticulture		
<b>Quarries:</b> Growing in size. Damage to roads by sand harvesting lorries	No mention of quarries in activities of the organisations		
<b>Boreholes, wells, fountain:</b> Water with high salt content, therefore unsuitable for vegetable production	use and management of boreholes; ensure continuous supply of water to communities; boreholes monitoring and repairing, setting up water piping networks; sensitization on the use of water points for agriculture;		
<b>Livestock yard:</b> Good and operational	Modernization of livestock production systems; Monitoring of animal disease and livestock production		
<b>Roads:</b> Poor condition, impassable in rainy season, which increases the cost of transportation; degraded by gully; broken bridge	No mention of roads or other infrastructure in activities of the organisations		
<b>Railway:</b> high insecurity as is used by bandits; fatal accidents	No mention of railways or other infrastructure in activities of the organisations		
<b>Schools:</b> currently being refurbished	Education and health;		
<b>Farmland:</b> Exhausted and degraded soils; Lack of fertilizers and improved seed; Out-dated agricultural equipment; Weeds and pests;	training against Striga, a parasitic weed that affects maize and sorghum crops; soil conservation and training on soil fertility management (organic manure, mineral manure, use of phosphates, composting); promotion of diversification of crops; improvement of agricultural technologies		
<b>Degraded land/gullies:</b> salinity; gully is enlarged due to landslides	prevention of erosion and soil conservation		



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